

611-TD-568-001

EOSDIS Core System Project

M&O Procedures: Section 7—System Monitoring

Interim Update

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Raytheon Systems Company
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Preface

This document is an interim update to the Mission Operations Procedures Manual for the ECS Project, document number 611-CD-500-001. This document has not been submitted to NASA for approval, and should be considered unofficial.

The document has been updated to include information relevant to ECS Release 5B.

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7. System Monitoring

7.1 Checking the Health and Status of the Network

Once a network has been discovered by **HP OpenView IP discovery and layout**, monitoring the state of the network can begin. Monitoring includes tasks, such as, checking the map for color alerts which indicate problems, creating submaps needing special monitoring, and checking for network changes.

Objects that have an abnormal condition can be identified without having to look at every object on the network map. A color alert on a symbol indicates that some part of that object may have problems. To isolate a fault somewhere on the network, follow the color alerts to increasingly more specific submaps until the specific object that is not functioning is reached. Follow color alerts by opening child submaps of objects that contain a color alert.

In addition, **HP OpenView** has the capability of monitoring the status of each of the application servers and modes. Through the use of this tool the user is capable of determining status of both hardware and software components.

Each procedure outlined will have an **Activity Checklist** table that will provide an overview of the task to be completed. The outline of the **Activity Checklist** is as follows:

Column one - **Order** shows the order in which tasks should be accomplished.

Column two - **Role** lists the Role/Manager/Operator responsible for performing the task.

Column three - **Task** provides a brief explanation of the task.

Column four - **Section** provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found.

Column five - **Complete?** is used as a checklist to keep track of which task steps have been completed.

Table 7.1-1. Monitoring - Activity Checklist (1 of 2)

Order	Role	Task	Section	Complete?
1	Fault Manager	Starting NNM (Network Node Manager) and the Graphical Interface	(P) 7.1.1	
2	Fault Manager	Verify that an object is not functioning	(P) 7.1.2	
3	Fault Manager	Looking at Maps for Color Alerts	(P) 7.1.3	
4	Fault Manager	Looking at Maps for New Nodes	(P) 7.1.4	
5	Fault Manager	Create Special Submaps for Monitoring Status	(P) 7.1.5	
6	Fault Manager	Checking for Event Notifications	(P) 7.1.6	
7	Fault Manager	Rediscovering Network	(P) 7.1.7	

Table 7.1-1. Monitoring - Activity Checklist (2 of 2)

Order	Role	Task	Section	Complete?
8	Fault Manager	Configure HPOV Monitoring Settings	(P) 7.1.1.1	
9	Fault Manager	Setup Data Collection	(P) 7.1.1.2	
10	Fault Manager	Add Vendor MIBs	(P) 7.1.1.3	
11	Fault Manager	Community Name Setup	(P) 7.1.1.3.1	
12	Fault Manager	Setup Map	(P) 7.1.1.4	
13	Fault Manager	Tivoli Enterprise Console	(I) 7.2	
14	Fault Manager	Application Servers	(P) 7.3	
15	Fault Manager	Locate Application Servers	(P) 7.3.1	
16	Fault Manager	Start Application Servers	(P) 7.3.2	
17	Fault Manager	Shutdown Application Servers	(P) 7.3.3	
18	Fault Manager	Remove Red Applications	(P) 7.3.4	
19	Fault Manager	Exit Application Servers	(P) 7.3.5	

Detailed procedures for tasks performed by the Fault Manager are provided in the sections that follow.

If you are already familiar with the procedures, you may prefer to use the quick-step tables. If you are new to the system, or have not performed this task recently, you should use the detailed procedures presented in Sections 7.1.1 through 7.1.5

For each procedure outlined in this section, there is a corresponding **QUICK STEP** procedures immediately following the procedure in this chapter. The **QUICK STEP** procedures are designed for persons who are *experienced network administrators with prior monitoring/network administration experience*.

7.1.1 Starting NNM (Network Node Manager)

HP **OpenView** Network Node Manager is a set of applications that are integrated with HP **OpenView** Windows (OVW). To Start NNM, HP Openview Windows must be activated first. Once activated, OVW will automatically start NNM. HP Openview windows will also automatically start the applications that are installed and registered.

Prerequisites for this Task

The network management processes that work with OVW and NNM must be running. The network management processes consist of the following HP OpenView background processes: **ovwdb**, **trapd**, **ovtopmd**, **ovactiond**, **snmpCollect**, and **netmon**. You can check to see if these processes are running with **/usr/ov/bin/ovstatus** command.

1. Check for required processes

The **Deputy Agent** must be running on the **MSS Server**.

-- Login to the MSS Server.

- Determine if the Deputy Agent is running (/bin/ps -ef | grep EcMsAgDeputy)
 - **If not**, start it by doing the following:
 - Run /usr/ecs/SHARED/CUSTOM/utilities/EcMsAgStartDeputy SHARED. The script determines if the Deputy Agent is already running (only one copy of Deputy Agent should be running at a time).
- 2. The **Subagent** must be running on the host(s) where you want to *manage applications*. If not, start it by doing the followings:
 - Run /usr/ecs/SHARED/CUSTOM/utilities/EcMsAgStartSubagent SHARED. (only one copy of Deputy Agent should be running at a time).
- 3. **EcMsCmEcsd** process must be running.
 - Determine if the "EcMsCmEcsd" process is running
 - (/bin/ps -ef | grep EcMsCmEcsd).
 - **If not**, start it by doing the following:
 - Run /usr/ecs/SHARED/CUSTOM/utilities/EcMsCmStartEcsd

This procedure explains how to start the HP OpenView Windows graphical user interface.

- 1 Set and initiate the appropriate environment variables:
 - setenv **DISPLAY** *hostname:0.0*
 - setenv **ECS_HOME** /usr/ecs
 - setenv **SHLIB_PATH** /opt/OV/lib
 - source /opt/OV/bin/ov.envvars.csh
 - source /etc/Tivoli/setup_env.csh
 - If the map is opened as a "read-only" map ("read-only" or "read-write" will be indicated in the lower left corner of the GUI), you will need to use the "File->Refresh Map" menu item to refresh the map whenever there are changes other than symbol color changes.
- 2 Type **\$OV_BIN/ovstart** at the command prompt and **press enter**.
 - If the network management processes are not running, you can start them by executing the **\$OV_BIN/ovstart** command.
- 3 Type **ovstatus** at the command prompt and **press enter**.
 - This command will check the status of the processes.

Start the HP OpenView Windows NNM Graphical Interface

- 4 `cd /data1/OPS/COTS/OV/bin` and press enter
 - Type `$OV_BIN/ovw -map mapname &` at the command prompt and **press enter**. This displays a map with two icons (IP Network and Services).
 - If HPOV is started without specifying a map, then the view is an expanded version of your current node.
 - If the map is opened as a "read-only" map ("read-only" or "read-write" will be indicated in the lower left corner of the GUI), you will need to use the "File --> Refresh Map" menu item to refresh the map whenever there are changes other than symbol color changes.
 - Double click on either the Internet or Services symbol to expand either symbol.

To exit NNM and all other integrated applications, you must exit OVW. You can exit OVW in one of the following ways:

- 6 Select **File: Exit** from the menu bar of any submap window or go to step number 7;
- 7 **Click** on the **Close** button on all open submap windows until a black submap window is displayed. When the black submap window is displayed, click on the **Close** button.
 - The open map is saved, and all the submap windows and dialog boxes of the map are closed. OVW, all NNM applications, and all other integrated applications exit.

IMPORTANT: Do not use the **Quick-Step** version of a procedure unless you are already very familiar with the procedure. To start NNM, execute the steps provided in the table.

Table 7.1-2. Starting/Monitoring NNM - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Login to appropriate machine	press Return
2	<code>setenv DISPLAY IPNumber:0.0 -- or -- setenv DISPLAY hostname:0.0</code>	press Return
	<code>cd /data1/OPS/COTS/OV/bin</code>	press Return
3	<code>\$OV_BIN/ovstart</code> (HPOV not running)	press Return
4	<code>ovw&</code>	press Return
5	Select Map, Map Open, <i>desiredmap</i>	Press Return

7.1.1.1 Configure Monitoring Settings

This section explains how to configure the appropriate elements to be managed and monitored by HP Openview. To ensure that the appropriate elements are being included as an elements to be monitored and managed by HPOV:

1. Bring up the IP Internet submap by double clicking on the IP Internet icon.

2. Ensure all icons representing managed objects (managed hosts and network devices, as listed in the site hardware baseline mapping) are being managed. An unmanaged icon will normally be wheat-colored. A managed icon will usually be blue, green, yellow, or red.

- - A view of the color scheme currently in use by HPOV can be obtained by selecting

- - Help->Display Legend.

3. Note: HPOV may discover some icons to be part of a subnet, and group them together under a subnet icon. In this case, the object icons may be found by "*drilling down*" to the next level (*double-clicking* on the subnet icon). If an object that should be managed by HPOV cannot be found, look for it by using the -- Locate->Selected Objects List... menu item.

-- This will bring up a "Locate by Selection Name" window.

The object (if it has been discovered by HPOV) can be found by typing all or part of the object name into the box labeled "Regular Expression (or substring):" on this window. When the name (or a part thereof) is entered and the "Apply" button is selected, HPOV will search for all instances of this object and will list them in the "Located and Highlighted:" box. If an object still cannot be found, it has not been discovered by HPOV. The most likely reasons for this would be if it is connected to the network via another device that has also not been discovered or it has been down since HPOV started its discovery process.

7.1.2 Verify That an Object Is Not Functioning

This section explains how to verify that an object is not functioning and assumes that HP Openview is running. If not, then see section 7.1.1 To verify that an object is not functioning, any of the following procedures can be executed.

- 1 Select the **Configuration** pull down menu

- 2 Select **System Information**

- OR -

- 1 Select the **Fault** pull down menu

- 2 Select **Network Connectivity: Poll Node**

- OR -

- 1 Select the **Fault** pull down menu

- 2 Select **Network Connectivity**

- 3 Select **Ping**

If these operations do not produce any responses or they time out, then the node is probably down or otherwise unreachable over the network. See Section 7.1.5 Checking for Event Notifications to verify event status of the node. If a Fault has occurred see Section 8 on Problem Management and Section 21 COTS Hardware Maintenance.

IMPORTANT: Do not use the quick step version of a procedure unless you are already very familiar with the procedure.

To verify that an object is not working, execute the steps provided in the table.

Table 7.1-3. Verify - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Configuration	Use the pull down menu
2	System Information	Pull down menu

7.1.3 Looking at Maps for Color Alerts

Looking at maps for color alerts, HP *OpenView* uses colored symbols to indicate the health and operational status of the various objects within the network. Operational status refers to the actual operation of the node on the sub-map. Operational status is changed by Network Node Manager(NNM) automatically when a change in the operational condition of the node is detected.

Table 7.1-4. Operational Status Colors

SYMBOL COLOR	STATUS
Blue	UNKNOWN. A device or a network that has been discovered by NNM. This can happen when a non-IP addressable device has been added to the map manually and NNM has not yet discovered it. The status is set to unknown. It cannot be determined.
Green	NORMAL. The device or network is up and functioning normally. The object is in its normal operational state.
Cyan	WARNING. There is a potential fault or problem
Yellow	MINOR or MARGINAL. There is something wrong with this object, but the device is still responding to NNM.
Orange	MAJOR. The object is in a state of having a major fault or problem.
Red	CRITICAL or DOWN. The device is not responding to NNM.

Looking at maps for color alerts

To check your network for color alerts, you must first have the map for the network open. To open a map, use the following procedure:

1. With HP *OpenView* NNM running, follow menu path **Map->Open**

- The **Available Maps** dialog box is displayed.
2. Select the name of the map you want to open and click on “**Open Map**”.
 - A confirmation box is displayed
 3. Click “**OK**”.
 - Any open map and its sub-map windows and dialogs close.
 - The **Home Sub-map (Root)** of the selected map is displayed.

If you do not know the compound status scheme of the open map, follow the menu path **Maps>Properties** to obtain the **Map Properties** dialog box and display/set the compound status scheme for default. Suppose there is a fault in an interface card in one of the workstations on your network. Use the following procedure to trace it using color alerts.

Looking at Maps for Color Alerts

1. Double click on the yellow **IP Internet** symbol
 - Note: The symbol will be yellow because the *critical failure* of the card in the workstation is propagated up to the level of the **IP Internet** symbol as a *minor* problem at that level.
 - The **Internet sub-map** opens and displays the IP network(s). One network symbol is yellow. This indicates a marginal problem with the network.
2. Double click on the yellow **IP network** symbols.
 - A network sub-map opens and displays the segment(s) attached to the gateway(s). The segment symbol is yellow. This indicates a problem somewhere on the segment.
3. Double click on the yellow **segment** symbol.
 - A **segment sub-map** opens and displays the nodes attached to that segment. Of all the nodes in the segment, the workstation node is red. The problem is isolated to that workstation.
4. Double click on the red **workstation** symbol.
 - A **Node sub-map** opens and displays its interface symbol. It is red.
 - You have isolated the fault to a single card of a single node on your network.

IMPORTANT: Do not use the quick step version of a procedure unless you are already very familiar with the procedure.

To look at Maps for Color Alerts, execute the steps provided in the table.

Table 7.1-5. Color Alerts- Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Internet Symbol	Double click
2	IP Network	Double click
3	Yellow segment symbol	Double click
4	Red workstation symbol	Double click

7.1.4 Looking at Maps for New Nodes

This section assumes that HP Openview is running. If not, then see section 7.1.1 **IP Map** will automatically discover the **IP-addressable nodes** for the open map. The purpose of this section is to identify new objects that have been discovered and added to the open map. Because discovery is automated, additional symbols of objects on the network map will be seen. **IP Map** must be enabled for the map. This is the default. **IP Map** places new symbols directly on the submap if autolayout is enabled. **IP Map** places new symbols in the **New Object Holding Area** if autolayout is disabled for the submap.

- 1 To check the default **Segment submap** for any new nodes that may have been discovered, open the default **Segment submap** from the segment symbol in the Network submap.
 - View the submap for any new symbols.
- 2 To easily see new symbols in the submap, disable autolayout for the submap. When autolayout is disabled, a **New Object Holding Area** appears at the bottom of the submap.
 - All newly added symbols are placed in the **New Object Holding Area**.

7.1.5 Creating Special Submaps for Monitoring Status

This section assumes that HP Openview is running on the desktop. If not, then see section 7.1.1 Submaps can be created that are logically organized instead of physically organized. This will help to create logical submaps for specialized monitoring.

IMPORTANT: See section 4-5 of the **HP Openview Network Node Manager User's Guide** to use this feature.

7.1.6 Checking for Event Notifications

This section assumes that HP Openview is running on the desktop. If not, then see Section 7.1.1 Anytime a change occurs on the network an event is generated. Through the **Network Node Manager's** internal processes, the event is sent to a predefined category in the **Events Browser** window. The **Events Categories** window provides a notification of when new events occur. This window has a button corresponding to each of the event categories. When the button that corresponds to a specific event category is clicked, a window listing the events for that specific category appears. These windows are **Event Browser** windows. When a button in the **Event Categories** window changes color, it is an indication that an event occurred on the network which relates to that category. The color of the button indicates the highest severity event in the category. The default categories included in the **Event Categories** window are:

Error Events.	This indicates inconsistent or unexpected behavior.
Threshold Events.	This indicates that a threshold was exceeded.
Status Events.	This indicates an object or interface status changed to up or

down, or an object or interface started or stopped responding to ICMP echo requests.

Configuration Events. This indicates a node's configuration changed.

Application Alert Events. This indicates an HP OpenView Window application generated an alarm or alert.

All Events. This list all the above events and other events in one dialog box.

In the following example the **Threshold Events** button is red, which indicates that a critical threshold was exceeded somewhere on the network.

- 1 Click on the **Threshold Events** button in the **Event Categories** window. The **Threshold Events Browser** dialog box appears with a chronological listing of the threshold events that have occurred, with the most recent events at the bottom of the list.
 - Each event listed includes the severity, time the event occurred, node on which the event occurred, and a brief event message.
- 2 To view the node that generated the event shown in this example, select the event from the list and click on **Action → Highlight Source on Map**.
 - A map will appear with the **busynode** node highlighted. At this point, select the highlighted node by clicking on it, and invoke appropriate operations from the menu bar to further diagnose and correct the situation which caused the threshold to be exceeded.
- 3 To delete the event, select the event and click on **Actions → Delete → Selected Event**.
 - This will delete only the selected event.
 - For more information about event notification, click on the **help** button in the dialog box for the event being viewed or select **View SNMP Events** from the **Help: Index → Task**

IMPORTANT: Do not use the quick step version of a procedure unless you are already very familiar with the procedure.

To check for **Event Notifications**, execute the steps provided in the table.

Table 7.1-6. Event Notifications - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Threshold Events	press Return
2	Action	press Return
3	Highlight source on Map	press Return

7.1.7 Rediscovering the Network

This section assumes that HP Openview is running on the desktop. If not, then see section 7.1.1 Occasionally you may edit your maps beyond recognition and want to start from scratch.

- 1 Exit all Openview sessions (if running) **cd /usr/OV/bin** and then enter **ovstop** at the command line
 - This will stop all HP OpenView processes
- 2 Remove the Openview database (**do a backup first**)
 - **cd \$OV_DB/openview**
 - **rm -rf \$OV_DB/openview/***
- 3 Remove all of the current events.
 - **rm \$OV_LOG/xnmevents.***
 - **rm \$OV_LOG/trapd.log***
 - **rm \$OV_LOG/netmon.trace***
- 4 Clear the SNMP cache.
 - **cd /usr/OV/bin**
 - **xnmsnmpconf -clearCache**
- 5 Re register OVW fields.
 - **ovstart ovwdb**
 - **ovw -fields**
- 6 Restart NNM.
 - **ovstart**
 - **ovw &**

IMPORTANT: Do not use the quick step version of a procedure unless you are already very familiar with the procedure.

Table 7.1-7. Rediscovery - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Stop all OVW sessions	select exit from pull down menu
2	ovstop	press enter
3	cd \$OV_BIN/openview	press enter
4	rm -rf \$OV_DB/openview/*	press enter
5	rm \$OV_LOG/xnmevents.*	press enter
6	rm \$OV_LOG/trapd.log*	press enter
7	rm \$OV_LOG/netmon.trace*	press enter
8	xnmsnmpconf -clearCache	press enter
9	ovstart ovwdb	press enter
10	ovw -fields	press enter
11	ovstart	press enter

1 2	ovw &	press enter
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7.1.8 Starting and Shutting Down Servers from HP OpenView

Starting and Shutting Down Servers from HP OpenView

One of the key features of HP OpenView is its capability to start and shutdown system servers using the graphical user interface. This can be accomplished either for all servers in a specific mode or individually by subsystem. Using this procedure will save significant effort over command-line initiation of servers.

- 1 Start the HP OpenView application.
- 2 After the **About OVW** box is displayed, the OVW **Root** window will appear. From the menu bar click on the **Map; Open; Open/List** selections to bring up the **Available Maps** selection window.
- 3 Select the desired map to bring up the **Root** map that displays the **Services** and **IP Internet** icons. Double click on the **Services** icon to display the **Service** submap.
- 4 From the **Service** submap select either the **Mode** icon to bring up the Mode submap to start or shutdown all servers for a given mode (TS1, TS2, OPS, etc.), or select a specific subsystem icon to start or shutdown servers for a specific subsystem.
- 5 Right-click and hold on the desired Mode icon to display the pop-up menu. Continue to hold and scroll down to either the **Start executable** or **Shutdown executable** option. Release the right mouse button and the servers for the selected mode will start or shutdown.
- 6 To start or shutdown specific servers in a subsystem (CLS, MSS, IDG, etc.), double-click on the desired subsystem icon in the **Service** submap.
- 7 From the expanded submap right-click and hold on the desired server application to display the pop-up menu, scroll down to the **Start executable** or **Stop executable** option, release the button and the server will start or shutdown.

In order to assist the DAACs with possible recovery issues, the following guides are provided:

- 1 A core dump of a SubAgent **will not** cause any other servers on a monitored host to core dump. It can, however, result in green icons displayed for servers that died while the SubAgent was down or blue icons for servers for which only partial events were received/sent. The following steps can help recover the state of the OpenView maps for the ECS monitored servers.
- 2 These incorrect objects can be removed manually by selecting Edit->Delete->From All Submaps after highlighting the erroneous object. It is important to "drill-down" to the lowest level and delete the objects from the lowest level and then from higher levels. This prevents "orphaned" objects from cluttering the OpenView object database ie) program

level objects without application level parent objects. If you delete the application level icon first, only the application object is removed. The program and process level object remains in the database and can cause erroneous results in the future.

- 3 To recycle the custom server monitoring maps in OpenView, select the following from the OpenView menu bar: Misc->ECS Application->Remove all ECS objects. You may need to select this option twice to delete all objects as OpenView occasionally misses objects when deleting a large number of objects. After the deletion, you will need to wait for a rediscovery cycle to complete before all currently running servers and all installed applications are displayed in OpenView. By default, the rediscovery cycle occurs every 20 minutes and is set the SubAgent configuration file as the option `MsAg_DiscoverInterval_sec`. The object database can become corrupt even when only hardware is being monitored by OpenView without the additional events generated by the ECS custom monitoring. The next step gives instructions on completely cleaning the object database. HP refers to this as a "forced rediscovery".

HP gives guidelines for cleaning the HP OpenView object database, which is the only way to recover the state of the object database if it becomes corrupt. The steps are as follows:

- `kill -15 <EcMsAgDeputy pid>`
- `kill -15 <EcMsCmEcsd pid>`
- Exit all ovw sessions
- Stop all NNM processes using the command 'ovstop' as root
- `source /opt/OV/bin/ov.envvars.csh` (or `.sh` as dictated by your current shell)
- `cd $OV_DB/openview`
- `rm -rf defmap mapdb ovwdb topo`
- `cd $OV_LOG`
- `rm xnmevents.* trapd.*`
- `xnmsnmpconf -clearCache`
- `ovstart ovwdb`
- `ovw -fields`
- `ovstart`
- `ovw` (run as root to recreate the directory structure)
- restart EcMsCmEcsd
- restart EcMsAgDeputy

You will need to wait for a rediscovery cycle to occur after clearing the database for all running servers and installed applications to be displayed again.

7.2 Tivoli Enterprise Console

The Tivoli Enterprise Console (TEC) provides centralized processing and management of distributed events, the ability to allow shared or partitioned administrator responsibilities based on enterprise-defined areas of responsibility, and a flexible interface to view and respond to events based on the events severity, source, location, or other characteristics. The following tables document the Tivoli event configuration.

Table 7.2-1. Disk Event Configuration

Resource	Response Level	Trigger When	Threshold	Response
Inodes Free	Warning	Less than	200	Change icon.
	Severe	Less than	150	Send Tivoli notice. Change icon.
	Critical	Less than	100	Send Tivoli notice. Change icon. Popup alarm.
Inodes Used	Warning	Greater than	X	Change icon.
	Severe	Greater than	X	Send Tivoli notice. Change icon.
	Critical	Greater than	X	Send Tivoli notice. Change icon. Popup alarm.
% Inodes Used	Warning	Greater than	80	Change icon.
	Severe	Greater than	90	Send Tivoli notice. Change icon.
	Critical	Greater than	95	Send Tivoli notice. Change icon. Popup alarm.
Space Free	Warning	Less than	200 MB	Change icon.
	Severe	Less than	100 MB	Send Tivoli notice. Change icon.
	Critical	Less than	50 MB	Send Tivoli notice. Change icon. Popup alarm.
Space Used	Warning	Greater than	X	Change icon.
	Severe	Greater than	X	Send Tivoli notice. Change icon.
	Critical	Greater than	X	Send Tivoli notice. Change icon. Popup alarm.
% Space Used	Warning	Greater than	80	Change icon.

	Severe	Greater than	90	Send Tivoli notice. Change icon.
	Critical	Greater than	95	Send Tivoli notice. Change icon. Popup alarm.
Tivoli DB Free Space	Warning	Less than	20 MB	Change icon.
	Severe	Less than	10 MB	Send Tivoli notice. Change icon.
	Critical	Less than	5 MB	Send Tivoli notice. Change icon. Popup alarm.

Table 7.2-2 Security Event Configuration (1 of 2)

Resource	Response Level	Trigger When	Threshold	Response
Check File Permission:				
/etc/passwd	Critical	Changes from	-rw-r--r--	Send Tivoli notice. Change icon. Popup alarm.
Compare Files:				
Daemon Status:				
amd	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.
biod	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.
cron	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.
inetd	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.
lockd	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.
lpd	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.
mountd	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.
nfsd	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.
portmap	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.
snmpd	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.

Table 7.2-2 Security Event Configuration (2 of 2)

Resource	Response Level	Trigger When	Threshold	Response
statd	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.
File Checksum:				
/etc/passwd	Warning	Not equal to	value	Change icon.
File Size:				
/var/adm/messages	Warning	Greater than	200 Kbytes	Change icon.
Occurrences in File:				
/var/adm/messages	Warning	Greater than	value	Change icon.
Process Instances:				
tivoli	Warning	Greater than	3	Change icon.
HP OpenView	Warning	Greater than	3	Change icon.
User Logins by User:				
root	Warning	Greater than	1	Change icon.
Users Logged in	Warning	Greater than	20	Change icon.
	Severe	Greater than	25	Send Tivoli notice. Change icon.
	Critical	Greater than	30	Send Tivoli notice. Change icon. Popup alarm.

Table 7.2-3. Network Event Configuration (1 of 3)

Resource	Response Level	Trigger When	Threshold	Response
Client RPC timeouts	Warning	% increase of	10	Change icon.
	Severe	% increase of	25	Send Tivoli notice. Change icon.
	Critical	% increase of	50	Send Tivoli notice. Change icon. Popup alarm.
Server Status				
Network Collisions	Warning	% increase of	5	Change icon.
	Severe	% increase of	10	Send Tivoli notice. Change icon.
	Critical	% increase of	25	Send Tivoli notice. Change icon. Popup alarm.

Table 7.2-3. Network Event Configuration (2 of 3)

Resource	Response Level	Trigger When	Threshold	Response
Network Collisions/packets	Warning	% increase of	5	Change icon.
	Severe	% increase of	10	Send Tivoli notice. Change icon.
	Critical	% increase of	25	Send Tivoli notice. Change icon. Popup alarm.
NFS bad calls	Warning	% increase of	10	Change icon.
	Severe	% increase of	25	Send Tivoli notice. Change icon.
	Critical	% increase of	50	Send Tivoli notice. Change icon. Popup alarm.
Input packet errors	Warning	% increase of	10	Change icon.
	Severe	% increase of	25	Send Tivoli notice. Change icon.
	Critical	% increase of	50	Send Tivoli notice. Change icon. Popup alarm.
Input packets	Warning	% increase of	10	Change icon.
	Severe	% increase of	25	Send Tivoli notice. Change icon.
	Critical	% increase of	50	Send Tivoli notice. Change icon. Popup alarm.
Output packet errors	Warning	% increase of	10	Change icon.
	Severe	% increase of	25	Send Tivoli notice. Change icon.
	Critical	% increase of	50	Send Tivoli notice. Change icon. Popup alarm.
Output packets	Warning	% increase of	10	Change icon.
	Severe	% increase of	25	Send Tivoli notice. Change icon.
	Critical	% increase of	50	Send Tivoli notice. Change icon. Popup alarm.

Table 7.2-3. Network Event Configuration (3 of 3)

Resource	Response Level	Trigger When	Threshold	Response
Remote oserv status	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.
RPC bad calls	Warning	% increase of	10	Change icon.
	Severe	% increase of	25	Send Tivoli notice. Change icon.
	Critical	% increase of	50	Send Tivoli notice. Change icon. Popup alarm.

Table 7.2-4. System Event Configuration (1 of 2)

Resource	Response Level	Trigger When	Threshold	Response
Available swap space	Warning	Less than	20 MB	Change icon.
	Severe	Less than	15 MB	Send Tivoli notice. Change icon.
	Critical	Less than	10 MB	Send Tivoli notice. Change icon. Popup alarm.
Host status:				
cyclops	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.
Lingering terminated processes	Warning	Greater than	10	Change icon.
	Severe	Greater than	20	Send Tivoli notice. Change icon.
	Critical	Greater than	30	Send Tivoli notice. Change icon. Popup alarm.
Load average	Warning	Greater than	10	Change icon.
	Severe	Greater than	20	Send Tivoli notice. Change icon.

Table 7.2-4. System Event Configuration (2 of 2)

Resource	Response Level	Trigger When	Threshold	Response
	Critical	Greater than	30	Send Tivoli notice. Change icon. Popup alarm.
Mail queue length	Warning	Greater than	20	Change icon.
	Severe	Greater than	40	Send Tivoli notice. Change icon.
	Critical	Greater than	50	Send Tivoli notice. Change icon. Popup alarm.
Page-outs	Warning	% increase of	50	Change icon.
	Severe	% increase of	80	Send Tivoli notice. Change icon.
	Critical	% increase of	90	Send Tivoli notice. Change icon. Popup alarm.

Table 7.2-5 Printer Event Configuration (1 of 2)

Resource	Response Level	Trigger When	Threshold	Response
Daemon status:				
lpsched	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.
Jobs in print queue:				
print_queue	Warning	Greater than	10	Change icon.
Status of print queue:				
print_queue	Critical	Becomes unavailable		Send Tivoli notice. Change icon. Popup alarm.

Table 7.2-5 Printer Event Configuration (2 of 2)

Resource	Response Level	Trigger When	Threshold	Response
Total size queued:				
print_queue	Warning	Greater than	10 M	Change icon.
	Severe	Greater than	20 M	Send Tivoli notice. Change icon.
	Critical	Greater than	30 M	Send Tivoli notice. Change icon. Popup alarm.

X - system dependent parameters.

7.3 Application Servers

HP OpenView has the capability to monitor the status of each application server and its mode. Through the use of this capability, both Tivoli and Remedy can be invoked from the option bar. These procedures assume that HP OpenView is active and available for service, otherwise follow steps 1-7 of 7.1.1 to start the server.

This procedure explains how to maneuver the HP OpenView Windows graphical user interface for application servers: .

- 1 Type **/opt/OV/bin/ovw -map XXXX & press enter.**
 - This command will display the appropriate IP and application server map:
 - **XXXX is the name of a previously created map
 - This command will display both the hardware map and the services map
- 2 Double-click **Services** icon
 - This command will display the service map, which displays each *application* and *mode* as icons. The colors of the icon indicate the state of the application server – (Select Help – select *Legend* - will display of the color legend)
 - This screen can be closed by double-clicking the 1st icon on the icon bar located above the display and below list of choices.
 - This command will display the status of each application server
- 3 Double-click **mode** icon
 - This command will display the mode map which has an icon for each mode (Shared, TS1, TS2, and OPS)
 - This command will display the status of the modes.

Double-click **on one of the modes** icon

- This command will display the executable module icon for the specific mode selected.
- This command will display the status of the executable modules.

Double-click **mode** icon

- This command will display the mode map which has an icon for each mode (Shared, TS1, TS2, and OPS)
- This command will display the status of the modes.

-- OR --

4 Double-click **on one of the application server** icons

- This command will display the executable application servers map. Each icon represents an executable module.
- This command will display the status of the executable modules.

Double-click **on one of the application servers** icon

- This command will display the executable module icon for the specific mode selected.
- This command will display the status of the executable modules.

Double-click **application server** icon

- This command will display the mode map which has an icon for each mode (Shared, TS1, TS2, and OPS)
- This command will display the status of the modes.

7.3.1 Locate Application/Program icons

1. From the HPOV menu bar, select: Locate->Objects->By Selection Name (or CTRL+N)
2. Type Application/Program ID desired (i.e., 7000004).
 - Hit "Apply" button and then locate the desired object. The object name has a naming convention of "applID_hostname_instID_mode" for an application object or "progID_applID_hostname_instID_mode" for a program object. You should select the one with an instID of -1, which indicates that the object represents the installed Application/Program.

3. Choose "Open" , then "Select" to highlight the desired icon.
4. Check the label of the installed application/program icon (wheat in color) to verify whether it is for the desired mode.

7.3.2 Start an Application/Program

1. Right-click on installed application/program icon (wheat in color).
2. Select "Start executable".
3. A start executable request will be sent to the Subagent on the selected managed host.
4. A new green application/program icon will be populated onto the map if the application/program has been started correctly.
5. Verify that the desired server programs are started by double-clicking the application icon to go to the program level submap.

7.3.3 Shutdown an Application

1. Right-click on running application/program icon (green in color).
2. Select "Shutdown executable".
3. A shut down executable request will be sent to the Subagent on the selected managed host.
4. The green application icon will be removed from the map if the application has been shut down properly.

7.3.4. Remove Red Application/Program icons (dead executable symbols) from the map

1. Make sure you really want to remove all red Application/Program icons from the map.
2. Select the "Misc. -> ECS Application -> Remove Died Executable Symbols" menu item from the HPOV menu bar.
 - The word "Sync" will appear at the lower left corner of the OV GUI.
 - After the "Sync" label disappears, all red ECS Application/Program icons will be removed from the map.

7.3.5 Exit HP OpenView and stop background processes

1. Select Map->Exit (CTRL +E).
 - Stop any background processes you have started by entering ctrl-c or a "kill" command.